Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Low temperature photo-induced carrier dynamics in the $\mathbf{GaAs_{0.985}N_{0.015}}$ alloy[1] YIBO HAN, CHENG CHEN, JUNBO HAN, LIANG LI, Huazhong University of Science and Technology, PINGPING CHEN, XINGJUN WANG, Chinese Academy of Science — We report the exploration of photo-induced carrier dynamics in the $GaAs_{0.985}N_{0.015}$ Alloy. The time-resolved and high magnetic field-dependent photoluminescence experiments were carried out to identify the radiative transitions, and the localized and delocalized states at various excitation power and temperature. A nonmonotonic dependence of the PL energy on temperature at low laser power, and the observation of two different decay times at the temperature below 100 K indicate the free electrons undergo a delocalization to localization transition with decreasing temperature. In the low temperature region, the localization is further enhanced by an applied high magnetic field, and an unexpected high field blocking of the diamagnetic shift was observed.

[1]This work is supported by the National Basic Research Program of China (Grant Nos. 2011CB925604 and 2012CB619200), the National Natural Science Foundation of China (Grant Nos. 61274141, 11104097 and 11404124).

Yibo Han
Huazhong University of Science and Technology

Date submitted: 09 Nov 2016 Electronic form version 1.4